

## CLAIMS

1. A method for producing a hydroxyl-modified ethylene- $\alpha$ -olefin copolymer, the method comprising:

mixing 100 parts by weight of an ethylene- $\alpha$ -olefin copolymer and 0.1 to 20 parts by weight of a peroxide having a hydroperoxy group; and

heating a mixture containing the peroxide and the ethylene- $\alpha$ -olefin copolymer at a temperature ranging between a 10-hour half-life temperature and a 1-minute half-life temperature of the peroxide.

2. A method for producing a hydroxyl-modified ethylene- $\alpha$ -olefin copolymer, the method comprising:

mixing 100 parts by weight of an ethylene- $\alpha$ -olefin copolymer, 0.1 to 20 parts by weight of a peroxide having a hydroperoxy group and a radical generator having a radical generating group so that not more than 1 mole of the radical generating groups are present with respect to 1 mole of the hydroperoxy groups, wherein said radical generator has a 10-hour half-life temperature not higher than a 10-hour half-life temperature of the peroxide; and

heating a mixture containing the ethylene- $\alpha$ -olefin copolymer, the peroxide and the radical generator at a temperature ranging between the 10-hour half-life temperature of the radical generator and 220°C.

3. The method according to claim 1 or 2, wherein the peroxide is t-butyl hydroperoxide, t-amyl hydroperoxide, t-hexyl hydroperoxide, t-octyl hydroperoxide, cumene hydroperoxide or diisopropylbenzene hydroperoxide.

4. The method according to any one of claims 1 to 3, wherein said mixing includes kneading.

5. The method according to any one of claims 1 to 4, wherein the ethylene- $\alpha$ -olefin copolymer has Mooney viscosity of 10 to 250 at 100°C.

6. The method according to any one of claims 2 to 5, wherein the radical generator is a compound having a 1-minute half-life temperature not higher than 195°C.

7. The method according to any one of claims 1 to 6, wherein the ethylene- $\alpha$ -olefin copolymer is a bipolymer of ethylene and an  $\alpha$ -olefin or a terpolymer of ethylene, an  $\alpha$ -olefin and a diene.

8. A hydroxyl-modified ethylene- $\alpha$ -olefin copolymer produced by the method according to any one of claims 1 to 7, the modified copolymer containing 0.001 to 1 mole of hydroxyl groups per 1 kg of the modified copolymer and having Mooney viscosity of 10 to 250 at 100°C.

9. A hydroxyl-modified ethylene- $\alpha$ -olefin copolymer composition comprising:

the hydroxyl-modified ethylene- $\alpha$ -olefin copolymer according to claim 8; and

at least one member selected from the group consisting of a thermoplastic resin, a filler, an antioxidant, a light stabilizer, a plasticizer, a lubricant, a flame retardant and a colorant.